

FIG. 1

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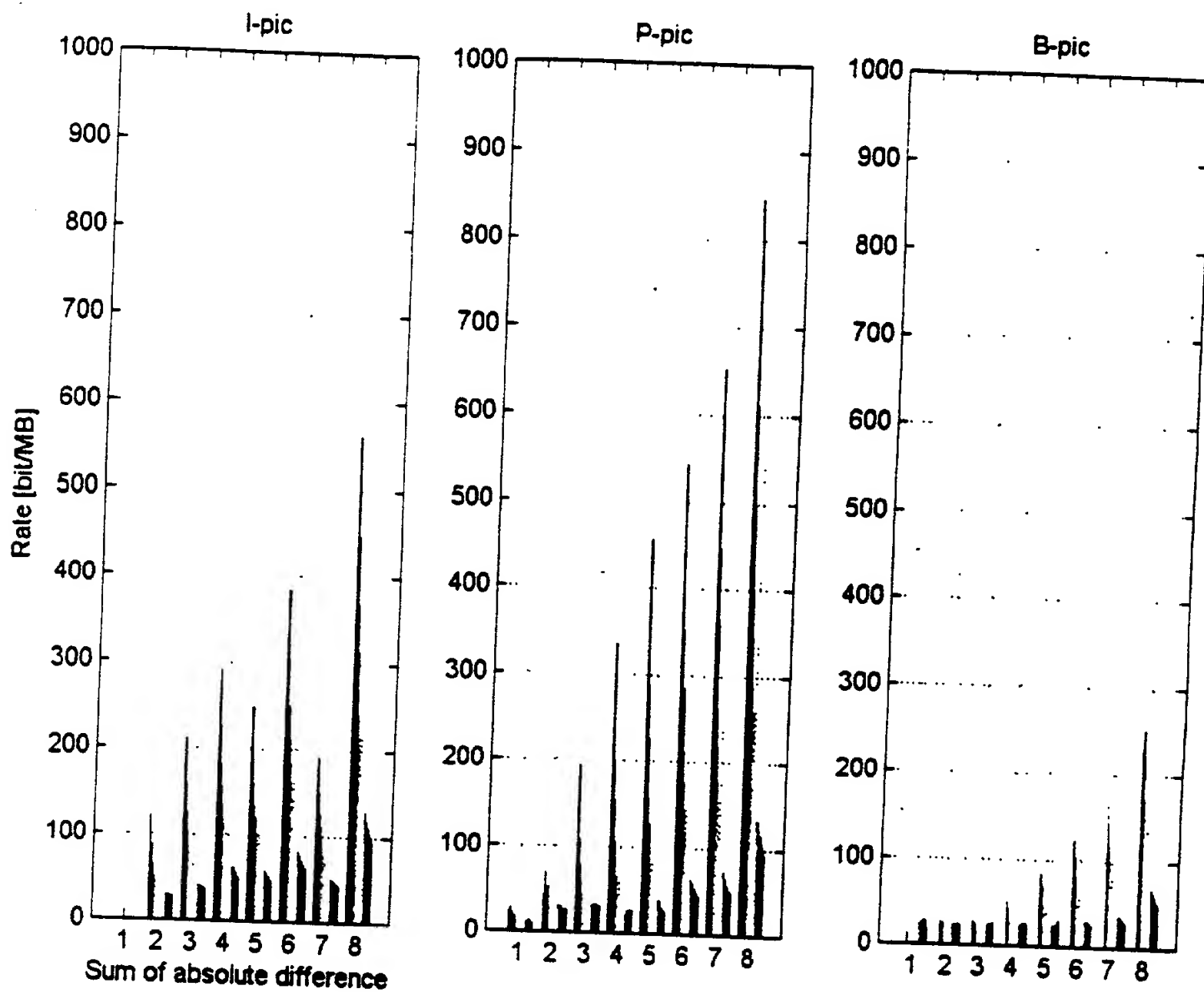


FIG. 2

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$MQuant = Q_j \cdot N_act_j$	
Estimated Quantization step size	$Q_j = d_j \cdot 31/r$
Virtual Buffer Discrepancy (d_j)	$d_j = B + S - j \cdot \frac{T}{N}$ <p> B: current buffer status S: bits spent until (j-1)th macroblock T: bit budget for current frame N: # of macroblocks in a frame </p>
Reaction Parameter (r)	$2 \cdot \frac{bit_rate}{picture_rate}$
Normalized Activity	$N_act_j = \frac{2 \cdot act_j + avg_act}{act_j + 2 \cdot avg_act}$
MB Activity	$act_j = \min\{var_of_lum_blk\}$ Note: it is the value of minimum variance among 4 luminance blocks in a macroblock.

FIG. 3

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<i>Foreman</i> (moderate to high motion)	TM5 rate control	Proposed rate control based on SAD
Bits/frame	4324	4412
PSNR	30.77	30.57

<i>Irene</i> (slow to moderate motion)	TM5 rate control	Proposed rate control based on SAD
Bits/frame	18822	18719
PSNR	36.31	36.03

FIG. 4

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